

From the foregoing it will be understood that the container 10 according to the inventions herein provides the many improvements, features and advantages set forth in the summary of the invention herein and satisfies a long felt but unmet need in the container industry.

As to the manner of usage and operation of the instant invention, the same should be apparent to those of ordinary skill in the art from the above disclosure and it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use. All equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the following in which it is claimed:

CLAIMS

1. A lightweight container comprising a body and a base,
said body comprising
 a generally cylindrical sidewall having a free upper end and a lower end, said free upper end defining an opening,
 said lower end of said sidewall merging into a transition section having a generally inverted frustoconical shape, said transition section merging into a closed bottom end,
 said transition section having a circumferential formation thereabout to reinforce said transition section to control and minimize flexing of said closed bottom end,
 said base comprising a ring-like structure mating with said generally inverted frustoconical shaped transition section and extending below said closed bottom end to provide a generally annular support surface upon which said container rests.
2. A lightweight container according to claim 1 wherein said base includes a stacking cavity within said ring-like support portion to allow nesting of a wide range of diameter

of the upper ends of other containers and thereby facilitate vertical stacking of the same or different cans upon each other.

3. A lightweight container according to claim 1 wherein the can body is made from materials selected from the group consisting of: aluminum, aluminum alloys, steel, and thermoplastic polymers.
4. A lightweight container according to claim 1 wherein said ring like structure has an inwardly projecting circumferential lug mating with said circumferential formation on said can body whereby the base is held on said body and the effectiveness of said circumferential formation is improved.
5. A lightweight container according to claim 1 wherein the thickness of the can body sidewall is generally the same thickness as the can body bottom end.
6. A lightweight container according to claim 1 wherein said sidewall is decorated with colors and said base is color coordinated with said decoration.
7. A lightweight container according to claim 1 wherein said can body bottom has a lower surface and said base has a generally planar panel within said ring-like structure, said panel having an upper surface and a lower surface, said upper surface being adjacent to and concealing said lower surface of said can bottom, said upper surface including indicia thereon to allow the use of the container for promotions and prizes.
8. A lightweight container according to claim 1 wherein the angular relationship between said sidewall and said transition section is in the range of 30 to 45 degrees.
9. A lightweight container according to claim 1 wherein the outside diameters of said container body and said base are substantially equal.
- 10 A lightweight container according to claim 1 wherein said circumferential formation has a radius of 0.030" to 0.150".
11. An apparatus for forming a circumferential formation in the bottom of a container comprising a generally planar bottom pad adapted to securely hold a can body perpendicular to said pad with said body bottom in place against said bottom pad, a means for closing said open end of said body, pressurizing said can body and bringing pressure to bear against said upper end of said sidewall to hold it against said bottom pad; and a rotating disc assembly movable generally in a plane perpendicular to said can body and into and out of the can body a predetermined distance to form said circumferential formation, said disc assembly being positioned just above said bottom pad whereby said circumferential formation will be just above the can body bottom, said bottom pad and said means being rotatable to allow the can body to spin during formation of said circumferential formation.

12. An apparatus according to claim 11 wherein said disc has an outer edge with a curvature, said curvature having a radius of from 0.030" to 0.150".

13. A method of making a container having a metal body with an open end and a closed end, said body having a mating base affixed to said closed end, said method comprising the steps of forming a planar blank of uniformly thin material, drawing a first cup from said blank, said cup having a sidewall, redrawing said first cup to form a second cup with a sidewall, ironing the sidewall of said second cup once to elongate said sidewall, forming a transition section in said sidewall adjacent said closed end, forming a circumferential formation in said transition section, and attaching said mating base onto said transition section.

14. A body for a lightweight container comprising a generally cylindrical sidewall having an upper end and a lower end, said upper end defining an opening and said lower end merging into a transition section having a generally inverted frustoconical shape, said transition section merging into a closed bottom end, said bottom end being generally planar, said transition section having a circumferential concave formation therein to control flexure of said closed bottom end.

15. A body for a lightweight container according to claim 14 wherein the angular relationship between said sidewall and said transition section is in the range of 30 to 45 degrees.

16. A body for a lightweight container according to claim 14 wherein said circumferential concave formation has a radius of from 0.030" to 0.150".

17. A base for a lightweight container comprising a generally ring-like structure having an upstanding, generally circularly shaped rim with an inside surface and an outside surface, said inside surface being adapted to closely mate with a bottom and transition section of a can body, said inside surface having a convex projection that is shaped and positioned to mate with the concave formation of the can body.

18. A base for a lightweight container according to claim 17 wherein said outside surface is inclined inwardly from bottom to top after manufacture and is adapted to be sprung outwardly and be generally in the same circular plane as a can body sidewall when attached to a can body.

19. A base for a lightweight container according to claim 17 wherein said ring-like structure of said includes an annular support ring below said rim, said base having a generally planar recessed panel within an annular support ring, said panel having an upper surface and a lower surface, said annular support ring providing a flat stable surface for a container, said lower surface being of a size to accommodate the upper ends of a wide variety of the same or other containers.